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Primary neuroendocrine prostate cancer with adrenal gland metastasis

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ABSTRACT

Primary neuroendocrine differentiation in prostate cancer occurs infrequently and represents a therapeutic challenge at present due to the poor prognosis involved. We present the case of a patient with de novo neuroendocrine prostate cancer who later developed metastases to adrenals bilaterally which were initially managed surgically.

1. Introduction

Neuroendocrine differentiation in prostate cancer (PC) rarely occurs de novo; it arises frequently after androgen deprivation therapy in patients with castration-resistant prostate cancer.[1]

Clinically, small cell prostate cancer and NEPC (Neuroendocrine Prostate Cancer) are often manifested by the presence of visceral or large soft tissue metastatic disease, a disproportionately low serum prostate-specific antigen level relative to the overall burden of disease, and a limited response to targeting of the androgen signaling axis.[2]

Nine percent of bilateral adrenal tumors arise from primary extrapulmonary cancer (cervix, esophagus, pharynx and larynx, colon and rectum, prostate). Until 2009 were only 4 reported cases of PC with adrenal metastasis.[3] There is no case reported in the literature of primary neuroendocrine PC with adrenal metastasis.

2. Clinical case

68-year-old male with history of systemic arterial hypertension for 7 years under control. He started in March 2018 with acute urinary retention, prostate specific antigen was evidenced at 3.7 ng/mL, FF 11%, PSA density 0.02 and prostate volume 126 cm3. Bipolar transurethral resection of prostate was performed reporting prostatic parenchyma infiltrated by atypical cells with solid growth pattern and multifocal tumor necrosis compatible with malignant neoplasm. Immunohistochemistry: prostate cancer with CD56, chromogranin A, synaptophysin, TTF-1, CK8/18 expression and cell proliferation index of 60%. He receives androgen deprivation therapy plus 5 cycles of chemotherapy with Capecitabine.

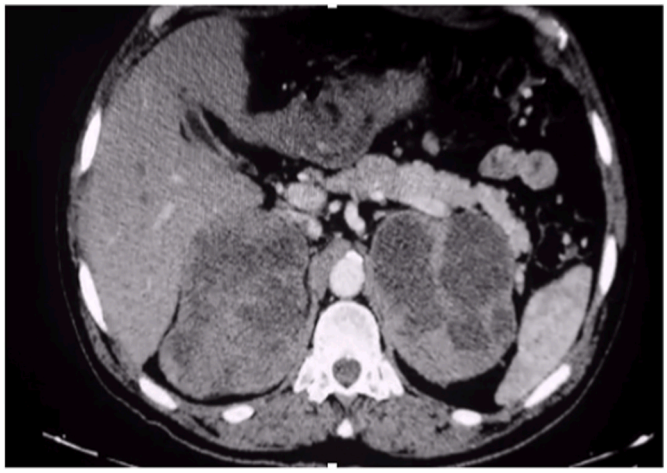

Image 1. Bilateral adrenal tumor.

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Table 1
Metabolic assessment.

	Values	Reference values	Unit
ACTH	93.8	0. −46	pg/ml
Vanilmandelic acid in urine	5.24	2–12	Mg/24h
Serum cortisol	64.3	48.2–195	Mcg/L
Urinary cortisol	25	4.3–176	Mcg/24h
Total Metanephrines	96.12	0–900	Mcg/24h
Urinary Metanephrines	40.4	<350	Ug/24h

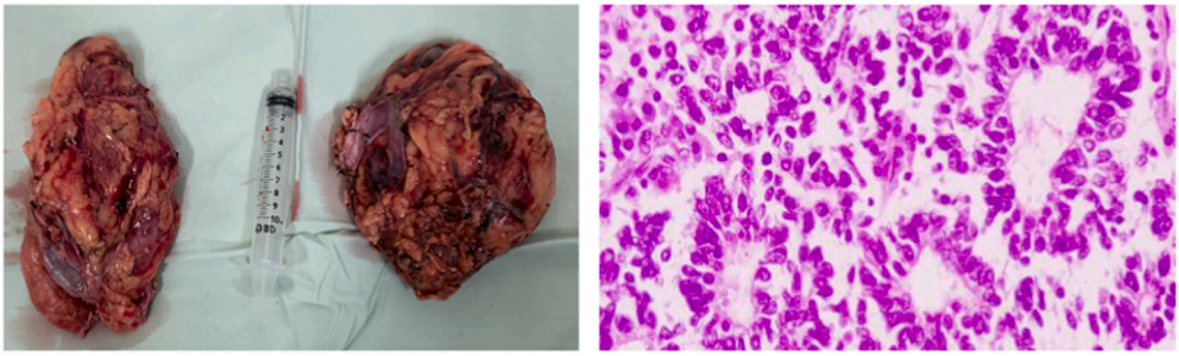

Image 2. Product of bilateral adrenalectomy/histology findings.

At 2020 he presented bilateral lumbar pain and a contrasted abdominal tomography was performed finding a bilateral adrenal tumor of 12 cm in its largest diameter (Image 1). General laboratory had no alterations. In serum and urine metabolic study elevated ACTH was noted due to tumoral infiltration of the adrenals (Table 1).

Bilateral adrenalectomy was performed. Histopathological study reported a bilateral poorly differentiated malignant neoplasm of 12 cm on its major diameter on the right side and 12.5 cm of major diameter on its left side with extensive tumor necrosis morphologically compatible with neuroendocrine carcinoma (Image 2).

The patient is alive and no deterioration has been reported during follow-up.

3. Discussion

De novo neuroendocrine variant of PC occurs in <2% of total cases, it has an incidence of 35 per 10,000 persons/year. Often it presents with symptoms related to local invasion or metastatic disease activity. It may be suspected in several clinical situations: in a prostate cancer patient followed for metastatic disease and presenting clinical or radiological signs of progression, upon the discovery of an extended metastatic disease associated to a low PSA. Expression of chromogranin A, synaptophysin and CD56 are seen in neuroendocrine cells and neural tissue that normally are scattered throughout the prostate gland. Clusters of malignant neuroendocrine cells are found among adenocarcinoma cells in most PC, sharing a common clonal origin. Rarely, patients may present with de novo small-cell carcinoma of the prostate, a poorly differentiated neuroendocrine carcinoma with similar histology as small-cell lung cancer (SCLC) as our patient. The key in the diagnosis is to suspect it: a patient with history of cancer and bilateral adrenal tumor the suspicion should be metastatic disease, which is managed according to the primary cancer.

4. Conclusion

Current information on the optimal treatment for this aggressive variant of prostate cancer is limited, with no specific treatment recommendation in most international clinical guidelines from different societies. Similar to small cell lung cancer, mainly platinum-based chemotherapy regimens such as cisplatin/etoposide, carboplatin/etoposide and docetaxel/carboplatin are used,[4] which are the regimens recommended by the NCCN (National Comprehensive Cancer Network). The outlook is still uncertain at present due to the poor prognosis associated with this type of neoplasm.

CRediT

Muñoz López: Conceptualization, Methodology, Rodenas Gil: Visualization, Investigation. Navarro Ruesga: Writing - Reviewing and EditingDomínguez Castillo: Data curation, Writing – original draft. Morales Montor: Supervision. Pachecho Gahbler: Supervision.

Declaration of competing interest

None.

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